

REMARKS

Reconsideration of the above-identified application in view of the amendments above and the remarks following is respectfully requested.

Claims 27, 28, 30-35, 42, 43 and 45-50 are in this case. Claims 33 and 48 were withdrawn by the Examiner from consideration as drawn to a non-elected species of the invention. Claims 27, 28, 30-32, 34, 35, 42, 43, 45-47, 49 and 50 have been rejected under § 102(b) or § 103(a). New independent claim 52 and dependent claims 53-55 have now been added. As a result of this amendment, the claims before the Examiner will be claims 27, 28, 30-35, 42, 43, 45-50 and 52-55.

Request for Continued Examination

The Applicant submits herewith a Request for Continued Examination (RCE) together with the required fee. The RCE is believed to overcome the finality of the last Official Action. The Applicant therefore requests that the above amendment be entered and that the arguments below and previously filed be given full consideration.

Claim Amendments

The Examiner has already entered amendments submitted together with the Response After Final Rejection filed May 26, 2008. The Applicant takes this opportunity to submit new independent claim 52 and new claims 53-55 which depend therefrom.

New claim 52 closely parallels original independent claim 27, but further specifies that the dopant is non-isoelectronic with atoms of the indirect-gap semiconductor. This limitation is supported by the extensive list of dopants (Gold, Silver, Platinum, Iron, Copper, Zinc, Cobalt, Tellurium, Mercury, Nickel, Sulfur and Manganese) appearing on page 9, lines 3-5 of the specification as filed, all of which

are non-isoelectronic with the preferred semiconductor example of silicon (also mentioned on page 9, lines 25-26). New independent claim 52 is believed to be patentable over all of the cited art for the same reasons as claim 27 currently before the Examiner, as already detailed in the Response After Final Rejection and as further detailed below.

Dependent claims 53-55 depend from claim 52 and parallel the limitations of claims 28, 32 and 35, respectively. No new matter has been added.

All newly added claims read on the elected species of the invention.

§ 103(a) Rejections

In the Advisory Action mailed June 16, 2008, the Examiner indicates that amended independent claims 27 and 42 are rejected for the same grounds of rejections previously stated against claims 29 and 36, namely, under 35 U.S.C. 103(a) as being unpatentable over Leheny in view of Yegnanarayanan et al. The Examiner's rejections are respectfully traversed.

Firstly, the Applicant respectfully requests that the Examiner give further consideration to the arguments already presented in the Applicant's Response After Final Rejection of May 26, 2008, which are believed to fully address the rejections of record and to be persuasive.

In the Advisory Action, the Examiner has stated:

Applicant argues that Yegnanarayanan et al. do not teach that doping of silicon with gold serves any purpose in achieving optical amplification. However, it would still be obvious to try the known composition of gold-doped silicon semiconductor used in the optical device of Yegnanarayanan. Applicant has further raised the issue of the dopant being isoelectronic with atoms of the indirect gap semiconductor in Leheny. However, the Leheny reference was cited to show the other elements of the optical amplifier; i. e. pumping source.

The Applicant has great difficulty understanding the Examiner's line of reasoning. In particular, it is unclear which reference is being considered the primary reference and what motivation or other justification the Examiner is proposing to support a finding of obviousness. In the above comments, it seems implicit that Yegnanarayanan is being cited as the primary reference, and Leheny is "*cited to show ... pumping source*". However, as stated earlier by the Applicant, Yegnanarayanan does not teach any optical amplification in a semiconductor, and certainly not by stimulated emission. Instead, Yegnanarayanan teaches the use of erbium doped fiber amplifiers (EDFA) external to the semiconductor. This is fully in keeping with the predominant thinking in the art that optical pumping to achieve population inversion and stimulated emission is not an available option in an indirect band-gap semiconductor.

If, on the other hand, Leheny were considered the primary reference teaching optical pumping to achieve population inversion and stimulated emission in an indirect gap semiconductor, these teachings are clearly and repeatedly limited by Leheny (detailed in previous response) as being applicable only to cases where the dopant is isoelectronic with atoms of the semiconductor, thereby clearly teaching away from any combination with the non-isoelectronic gold-doped silicon of Yegnanarayanan.

In its recent decision in *KSR INTERNATIONAL CO. v. TELEFLEX INC. ET AL.* (No. 04-1350, 2007), hereafter "KSR", quoting *In re Kahn* (441 F. 3d 977, 988 (CA Fed. 2006)), the Supreme Court reiterated that "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal

conclusion of obviousness,” and that “To facilitate review, this analysis should be made explicit.” (KSR, at page 14).


At present, the Examiner seems to be citing Yegnanarayanan to teach element (a) of claims 27 and 42, and Leheny to teach element (b) of these claims, without making explicit “some articulated reasoning with some rational underpinning” as to how and why it would be obvious for one ordinarily skilled in the art to modify Leheny in view of Yegnanarayanan, or vice versa, to arrive at the claimed invention.

In KSR, the Supreme Court further reiterated various secondary considerations which must be taken into account when assessing the question of obviousness. The Court cited *United States v. Adams*, 383 U. S. 39, 40 (1966), (KSR, at page 12), where “The Court relied upon the corollary principle that when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious.”

In the present case, the Examiner’s assertion of obviousness flies in the face of explicit teaching away from such a combination by Leheny. The Examiner’s statement that it would be “*obvious to try the known composition of gold-doped silicon semiconductor*” is clearly rebutted by Leheny’s own teachings of an isoelectronic dopant as a requirement for achieving population inversion (detailed in the previous response) which clearly teaches away from the non-isoelectronic semiconductor-dopant combinations claimed according to the present invention.

In view of the above amendments and remarks, the Applicant respectfully submits that the Examiner has failed to establish a prima facie case that the invention as claimed should be found obvious in view of the Leheny and Yegnanarayanan. Reconsideration of the Examiner's rejections under § 103(a), and allowance of the claims, is respectfully and sincerely solicited.

Respectfully submitted,



Mark M. Friedman
Attorney for Applicant
Registration No. 33,883

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